

## CHRONIC TRICHOTHECENE MYCOTOXICOSIS MAY BE INDISTINGUISHABLE FROM CFS

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**OBJECTIVE:** Chronic exposure to trichothecene mycotoxins (mold-produced toxins) is known to be both immunotoxic and neurotoxic in animal studies. Accidental exposure to these toxins can occur when toxigenic molds grow in buildings and release spores into the air. The objective of this research was to review the available evidence which suggests that chronic inhalation of certain mycotoxins produces a constellation of symptoms and laboratory abnormalities consistent with the Chronic Fatigue Syndrome.

**METHOD:** Both a hand-search and a MedLine-based search of the literature were conducted. Personal communication with key researchers in the field and presumed victims of chronic mycotoxicosis were included.

**RESULTS:** In 1982, concerned that trichothecene mycotoxins may be used as a chemical warfare agent, the Department of the Army commissioned the National Research Council to review the available literature on the potential health effects of exposure to trichothecene mycotoxins. They concluded that there was no well defined cohort of people that had been exposed via inhalation, the presumed route of interest on the battlefield. Thus the potential health effects of inhalation exposure were not known.

In 1986, Croft et al. , with funding from the Army, reported chronic inhalation mycotoxicosis in a household in Chicago. Subsequently, there have been published reports or presentations of chronic mycotoxicosis in several homes, office buildings and a hospital. For every published report, experts in the field relate several unpublished cases. In California, two episodes involving groups of residences have been reported in the lay press since 1994. Most, but not all cases have involved molds which produce trichothecene-class mycotoxins.

Several of the published reports explicitly state that the symptom constellation experienced by mycotoxin victims is similar or identical to CFS. Almost all of the published reports are consistent with a diagnosis of CFS. At a 1994 conference dedicated primarily to mycotoxigenic fungi, Auger reported that most of his patients met the 1988 CDC criteria for CFS. Cognitive impairment was significant. He referred several of these victims to an occupational neurologist, who diagnosed them with "toxic encephalopathy". He reported evidence of immune system impairment in many of his patients.

Johanning reported evidence for immune dysfunction in a cohort from an office building in New York. In addition to laboratory findings such as reduced natural killer cell number, clinical findings included recurrent vaginal candidiasis and bacterial infections. Several of his cases were severely disabled.

Although longitudinal data on patients is very limited, at least one cohort has been followed for 10 years. Less than 20% of the victims reported complete recovery. Most reported some recovery. About 10% either did not recover or became worse.

**SUMMARY:** Most aspects of chronic trichothecene mycotoxicosis are consistent with CFS, including the symptoms, laboratory findings and recovery profile. It is suggested that further research is warranted to determine if a subgroup of patients diagnosed with CFS are actually suffering from mycotoxicosis.

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